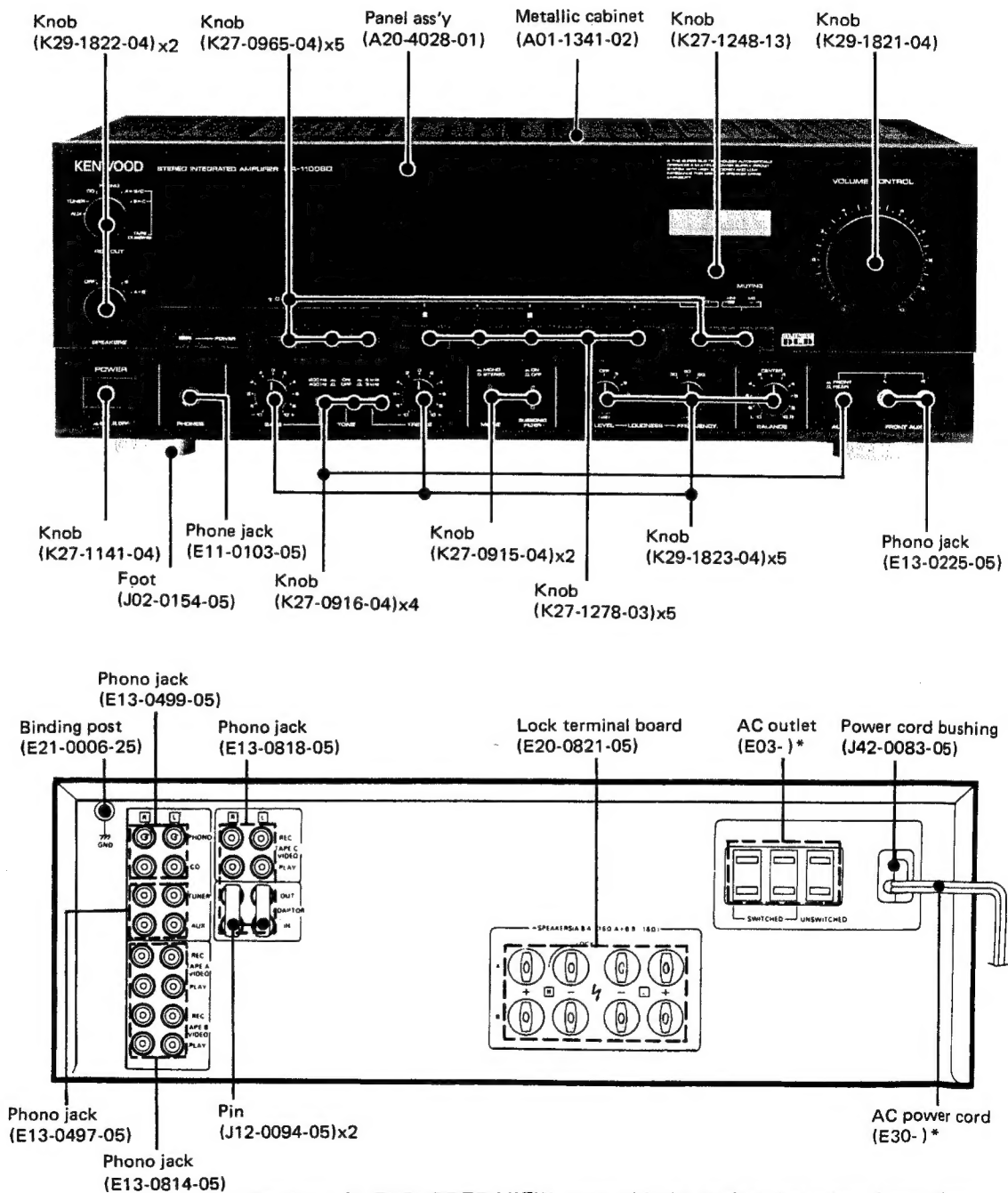


KENWOOD KA-1100SD

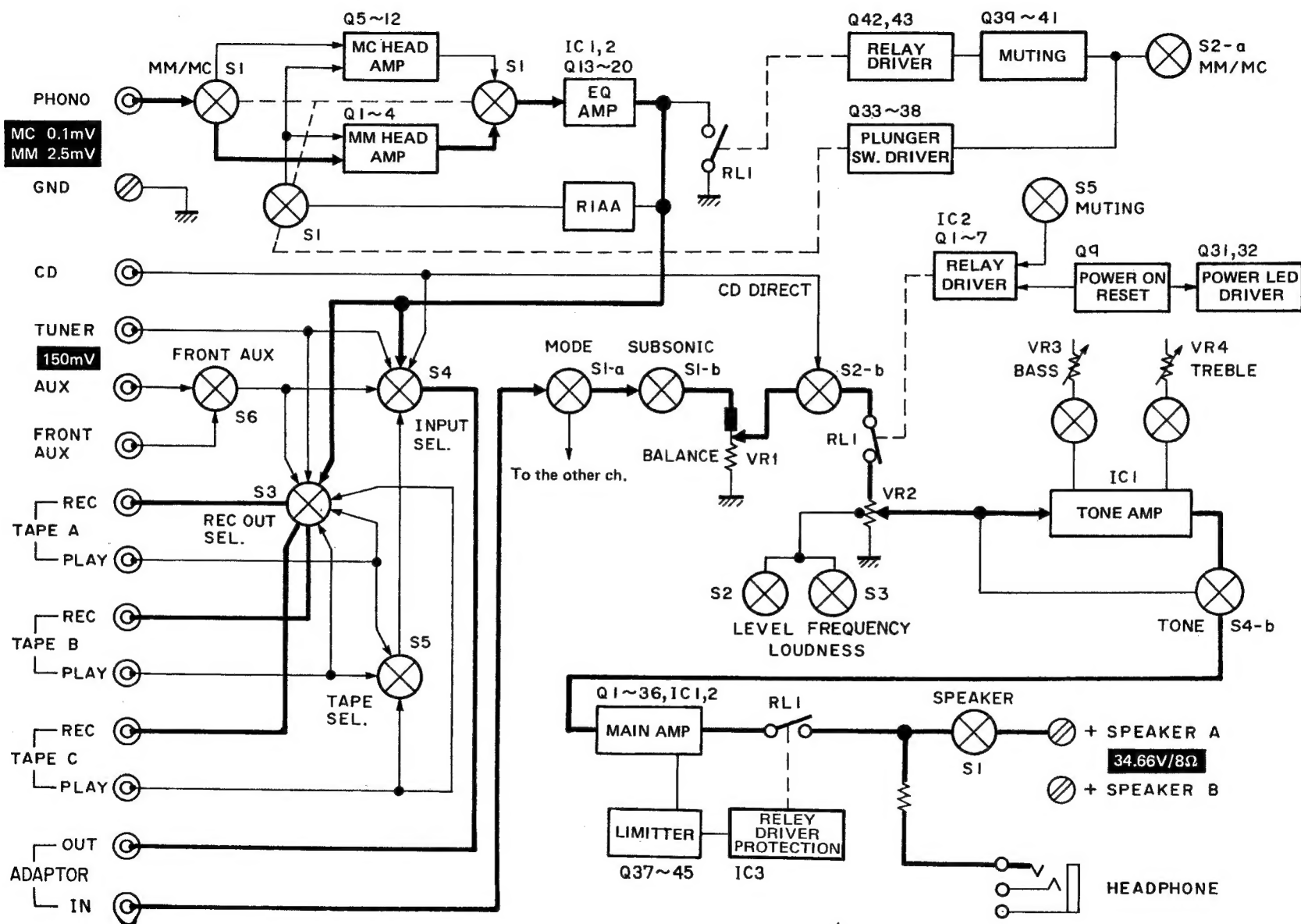
STEREO INTEGRATED AMPLIFIER



Caution : In EXPLODED VIEW, parts with the exploded numbers larger than 700 are not supplied.

*Refer to Parts list on page 12.

BLOCK DIAGRAM



CIRCUIT DESCRIPTION

(X08-2160-81)

Element	Use and function	Operation, rating and interchangeability
Q1~Q4	Differential amp	Input differential amp for MM cartridge.
Q5~Q12	Differential amp	Input differential amp for MC cartridge.
Q13~Q16	Cascade	
Q17, Q18	For constant current supply	Determines the current supplied to the input differential amp, together with D11~D13 and R31~R34.
Q19~Q22	For constant current supply	Constant current supply circuit for output complementary circuit Q23~Q26.
Q23~Q26	Output complementary circuit	
Q27, Q28	Power supply control transistor	Control transistor for EQ constant voltage circuit.
Q29, Q30	Constant current for power supply	Constant current supply transistor for Q27 and Q28.
Q31, Q32	Flip-flop	Drives power indicator.
Q33~Q38	Plunger relay drive	Drives the plunger of the relay which switches MM and MC mode.
Q39~Q43	Muting	Mutes the output when switching between MM and MC mode.
IC1	Equalizer amp	

(X07-2200-11)

Element	Use and function	Operation, rating and interchangeability
Q1, Q2	First stage differential amp	
Q3, Q4	Constant current	Constant current transistors for first stage differential amp Q1 and Q2.
Q5~Q8	Cascade	
Q9, Q10	Second stage differential amp	
Q11~Q14	Third stage differential amp	Class A amplifier.
Q15, Q16	Voltage shift	
Q17, Q18	Constant current	
Q19, Q20	Bias	
Q21~Q24	Pre-driver	
Q29~Q32	High power	High output final transistor.
Q33~Q38	Low power	Low output final transistor.
Q37~Q44	Current protection	Q43 and Q44 are high tension transistors.
Q45	Protection driver	Drive transistor for protection IC.
IC1, IC2	High/Low power selector IC	Switching IC for high and low output signal transistor.
IC3	Protection relay driver	Driven by Q45 to drive protection relays RL1 and RL2.

(X11-1890-01)

Element	Use and function	Operation, rating and interchangeability
Q1, Q2	Muting	Controlled by muting switch S5.
Q3	Muting indicator inverter	Controlled by IC2 to turn off at muting on.
Q4, Q7	Muting relay driver	Controlled by IC2 to turn on when muting relay RL1 is activated.
Q5, Q6	Muting indicator driver	Turns on when Q3 is on (muting switch S5 is on) to light the indicator.
Q9	Power on reset	
IC2	Relay driver	Controls the muting relay RL1 and the muting indicator circuit.

CIRCUIT DESCRIPTION

DESCRIPTION OF SUPER DLD CIRCUIT

With the former DLD amp which has high efficiency, the heatsink can be small, compared with class B amplifier which has the same output power, resulting in high cost performance.

However, the normal listening output power is several mW to several hundred mW and the high voltage circuit seldom operates. For example, with the circuit shown in Fig. 1, the high and low setting is 30W/8Ω to obtain maximum output power of 100W/8Ω. Therefore, at low

power of 0~30W, low voltage circuit consisting of Q33, Q35, D2, D9, D11, C70 and C71 functions and high voltage circuit consisting of D1, C72 and C73 operates rarely.

When the high voltage circuit operates, the low voltage circuit does not operate.

With the super DLD circuit, the circuit which is not operated is effectively used to improve performance and tone quality. The operation of the super DLD is described below.

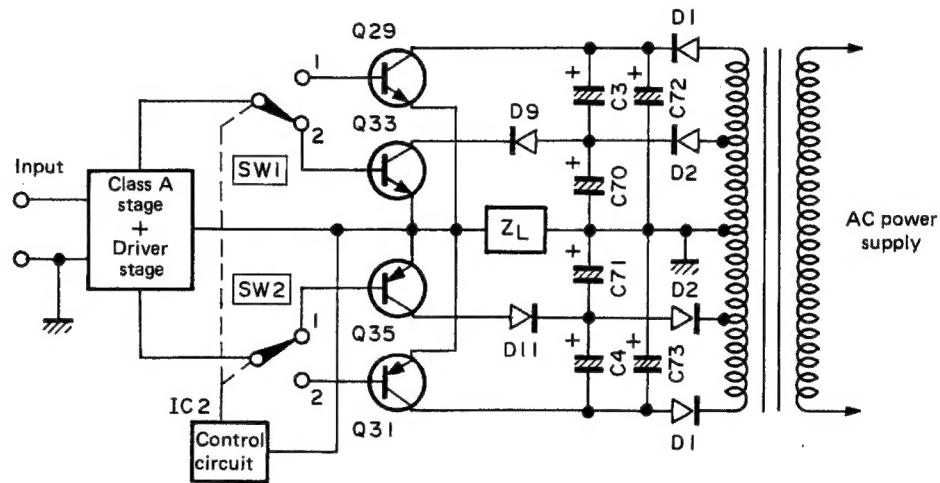


Fig. 1

OPERATIONAL DESCRIPTION

As shown in Fig. 1, C3 and C4 are added to the former DLD circuit to form super DLD circuit. Hereafter, the operation of the amplifier is class B and the description applies to positive side half cycle.

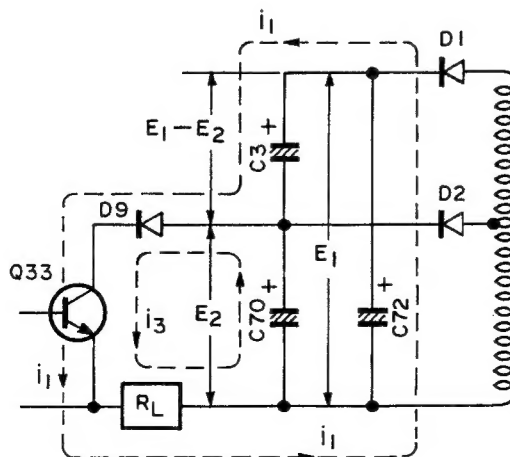


Fig. 2-1

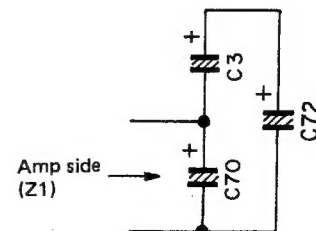


Fig. 2-2

CIRCUIT DESCRIPTION

1. Low power operation

When Q29 opens, the circuit in Fig. 1 can be seen as an equivalent circuit shown in Fig. 2-1.

- At non-signal condition, C3, C70 and C72 are fully charged and voltages E1, E2 and E1-E2 are supplied to C72, C70 and C3 respectively.
- When the signal is applied and Q33 turns on, C70 supplies current i_3 to RL via D9 and Q33 and C72 supplies current i_1 to RL via C3, D9 and C33. Namely, C3 functions as an i_1 bias circuit.
- When this operation is viewed from the amp, the circuit can be described as shown in Fig. 2-2. Namely, the power impedance Z1 viewed from the amp is as follows.

$$Z_1(j\omega) = \frac{1}{j\omega} \cdot \frac{C3 + C72}{C3 \cdot C72 + C70(C3 + C72)}$$

Assuming that $C3 = C70 = C72$,

$$Z_1(j\omega) = \frac{1}{j\omega} \cdot \frac{1}{\frac{3}{2}C70}$$

Therefore, the circuit is the same as the former circuit in which C3 and C4 are not employed and C70 is increased by 3/2. The power impedance is decreased by 2/3, to 33%.

Therefore, the AC component at collector voltage of Q33 is decreased, resulting in improved performance and sound quality.

2. High power operation

When Q33 opens, the circuit in Fig. 1 can be seen as an equivalent circuit shown in Fig. 3-1.

- When the signal is supplied and Q29 turns on, the series circuit consisting of C3 and C70 supplies i_3 to RL via Q29 and C72 supplies i_1 to RL via Q29.
- When this operation is viewed from amp, the circuit can be described as shown in Fig. 3-2. Namely, the power impedance Z2 viewed from the amp is as follows.

$$Z_2(j\omega) = \frac{1}{j\omega} \cdot \frac{C3 + C70}{C3 \cdot C70 + C72(C3 + C70)}$$

Assuming that $C3 = C70 = C72$,

$$Z_2(j\omega) = \frac{1}{j\omega} \cdot \frac{1}{\frac{3}{2}C72}$$

Therefore, the circuit is the same as the former circuit in which C3 and C4 are not employed and C70 is increased by 3/2. The power impedance is decreased by 2/3, to 33%. Therefore, the AC component at collector voltage of Q29 is decreased, resulting in improved performance and sound quality.

This operation can be applied to the negative side half cycle.

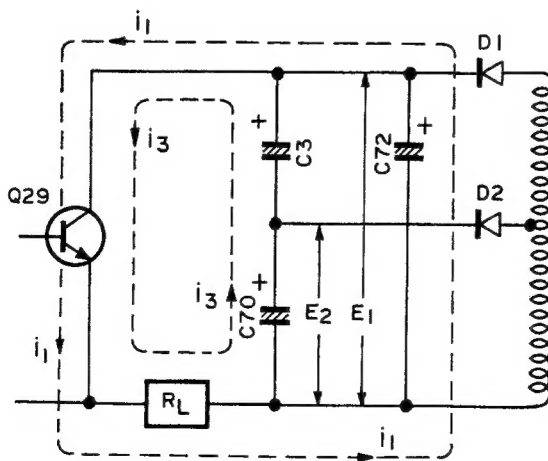


Fig. 3-1

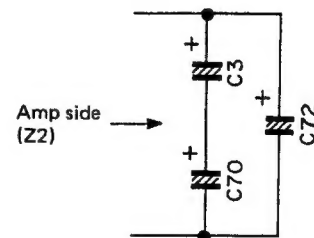
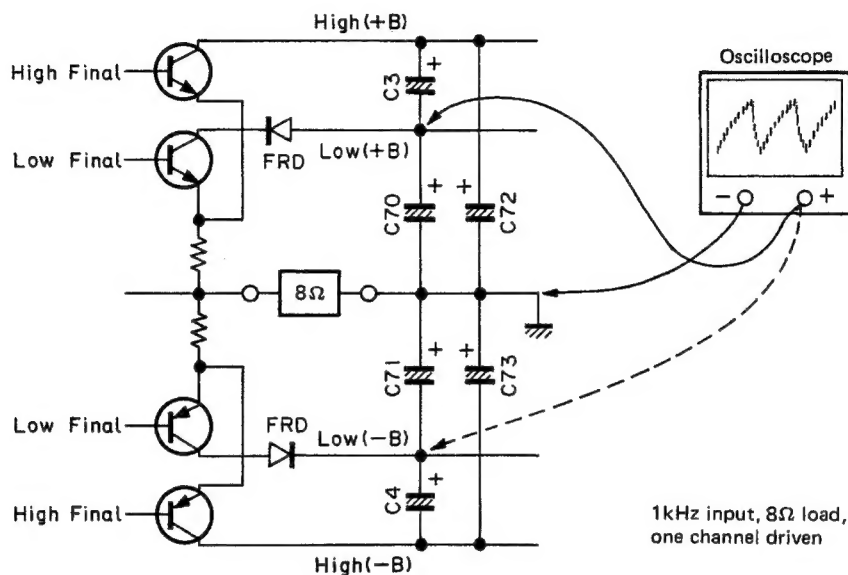


Fig. 3-2

CIRCUIT DESCRIPTION

CHECKING METHOD OF SUPER DLD CIRCUIT OPERATION

1. Connect an oscilloscope to LOW (+B) and GND.
Set the oscilloscope input coupling mode to AC.



2. Continuously change the output voltage and monitor the ripple waveform at high and low switching.

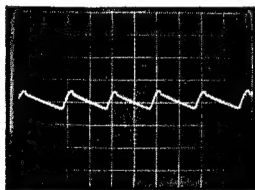


Photo 1
Volume : 0

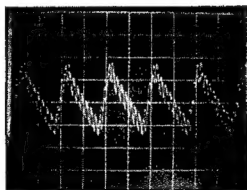


Photo 2
Just before
switching

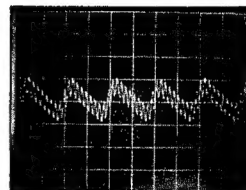


Photo 3
Just after
switching

3. Connect the oscilloscope to HIGH (-B) and GND.
Set the oscilloscope input coupling mode to AC.

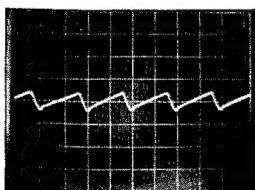


Photo 4
Volume : 0

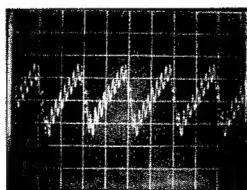


Photo 5
Just before
switching

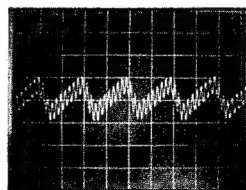


Photo 6
Just after
switching

4. Check on the opposite channel's LOW (+B) and HIGH (-B) line in the same way.

CIRCUIT DESCRIPTION

CONSTANT-VOLTAGE POWER SUPPLY CIRCUIT

D9 : RD20J (B2)

A Zener diode (constant-voltage). This generates the reference voltage for this circuit. Even if the current flowing into D9 fluctuates, the voltage at point A is kept constant (Approximately 20.6V.)

C51 : 100 μ , 25V

Used as the ripple filter and to prevent the noise generated by D9.

Q27 : 2SD313V-AL

A current amplifier. This is necessary when the load current is large or the capacity (I_z) of the Zener diode is small.

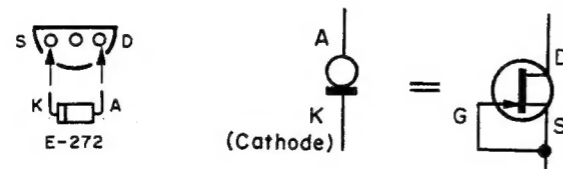
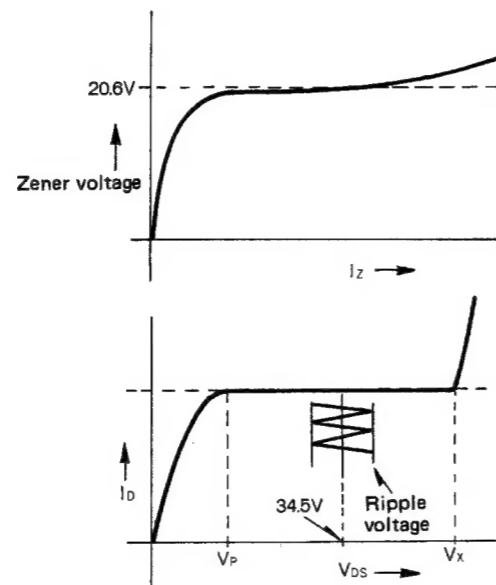
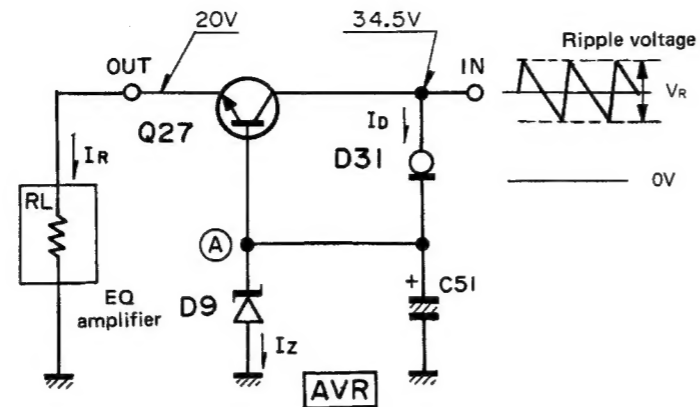
D31 : E-272

A constant-current element. This supply a constant current to the Zener diode to obtain a more constant voltage.

Constant-current characteristics: When the voltage between the gate and source of the FET is 0 (zero) and V_{DS} is between $V_P \sim V_X$, the drain current changes little.

The gate and source of the FET are connected with a constant-current diode (E-272). The anode corresponds to the drain, and the cathode corresponds to the gate and source.

- Constant current diodes E-272 (D27~32) in some pre-amplifier unit are indicated by the symbols of FET on the silk of the printed circuit board. Insert each of them so that the drain will be connected to the anode and the source to the cathode (See the following figure.)



ADJUSTMENT/REGLAGE/ABGLEICH

ADJUSTMENT

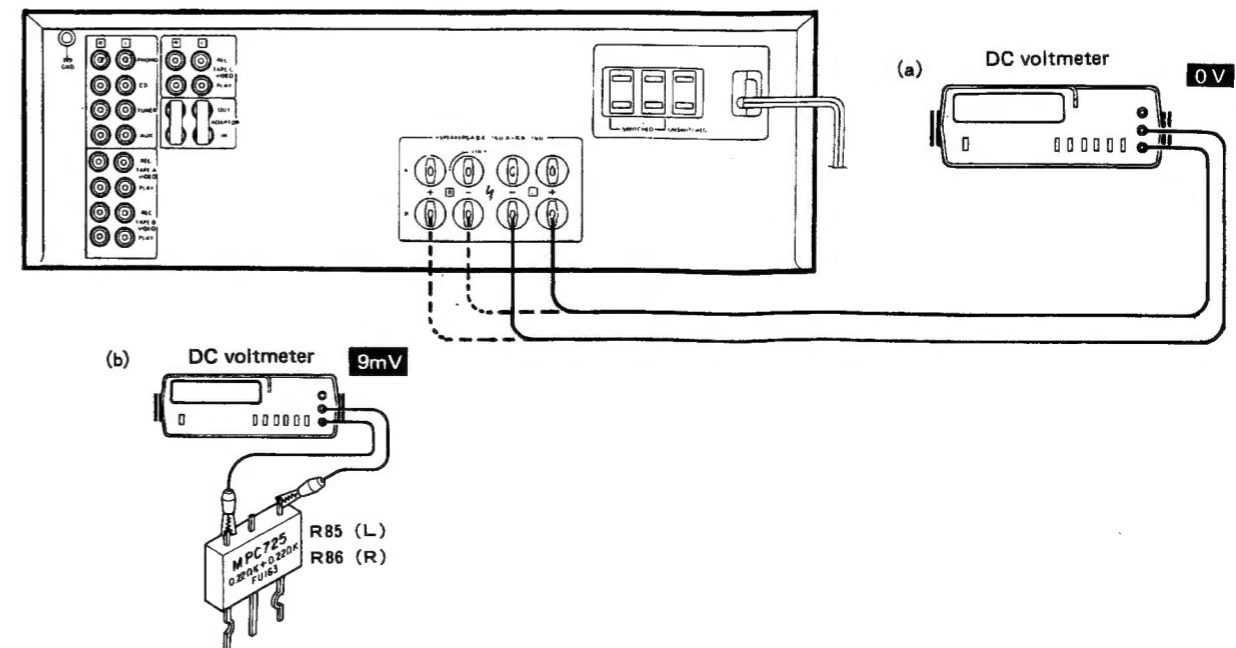
No.	ITEM	INPUT SETTINGS	OUTPUT SETTINGS	AMPLIFIER SETTINGS	ALIGNMENT POINTS	ALIGN FOR	FIG.
Unless otherwise specified, the individual switches should be set as follows: SPEAKER: B							
1	OFFSET	—	Connect a DC voltmeter to SPEAKER B terminal.	VOLUME: 0	VR1 (L) VR2 (R)	0V	(a)
2	IDLE CURRENT	—	Connect a DC voltmeter across R85 (L) R86 (R)	VOLUME: 0	VR3 (L) VR4 (R)	9mV	(b)

REGLAGE

N°	ITEM	REGLAGE DE L'ENTREE	REGLAGE DE LA SORTIE	REGLAGE DE L'AMPLIFICATEUR	POINTS DE L'ALIGNMENT	ALIGNER POUR	FIG.
Sauf en cas d'indications spéciales, régler chaque commutateur comme suit: SPEAKER: B							
1	OFFSET	—	Connecter un voltmètre de CC aux bornes de sortie + et - (SPEAKER B)	VOLUME: 0	VR1 (G) VR2 (D)	0V	(a)
2	COURANT DE POLARISATION	—	Connecter un voltmètre de CC SUR R85 (G) R86 (D)	VOLUME: 0	VR3 (G) VR4 (D)	9mV	(b)

ABGLEICH

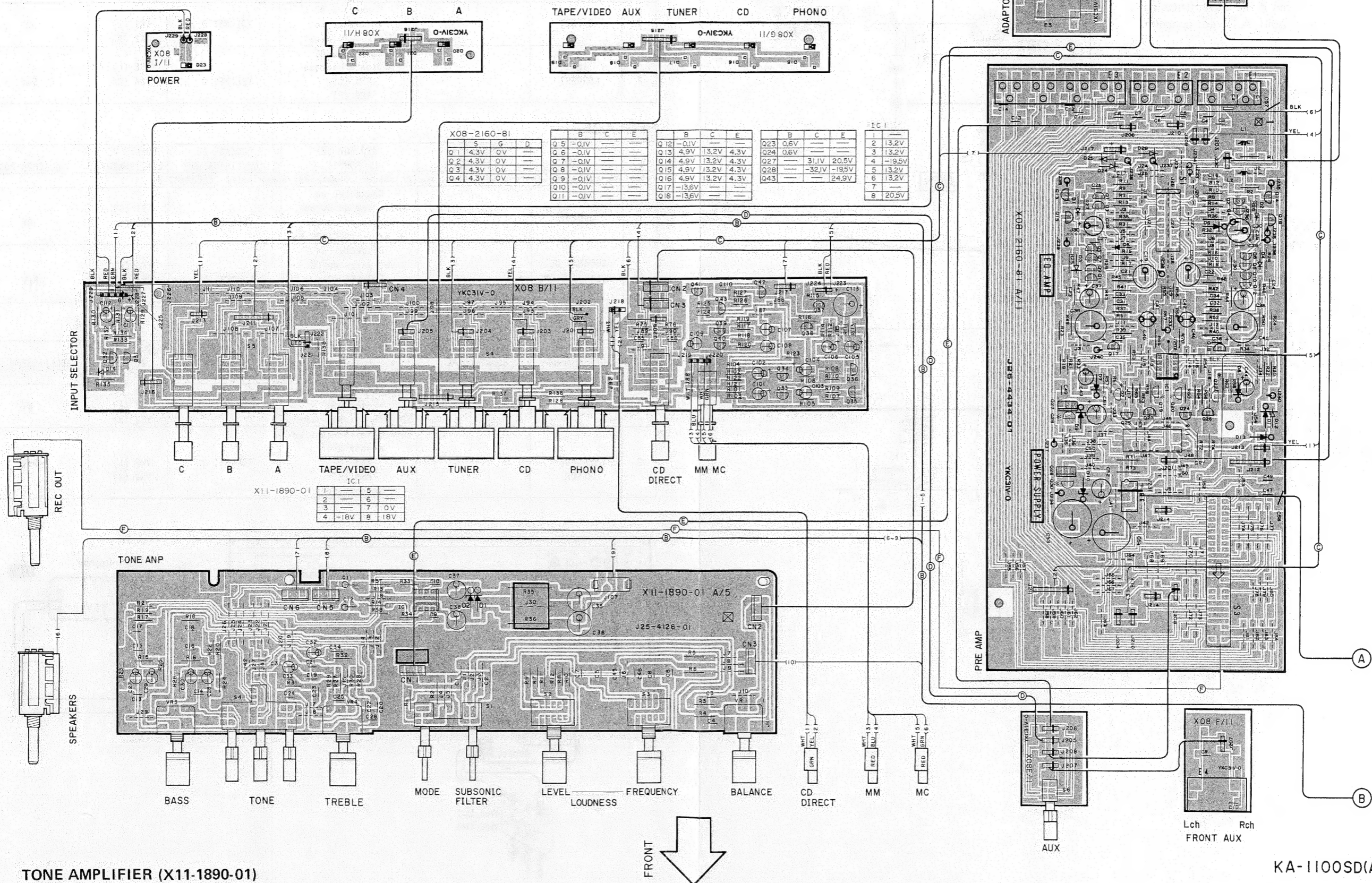
NR.	GEGENSTAND	EINGANGS-EINSTELLUNG	AUSGANG-EINSTELLUNG	VORSTÄRKER-EINSTELLUNG	ABGLEICHE-PUNKTE	ABGLEICHEN FÜR	ABB.
Außer wenn anders angegeben, die verschiedenen Schalter wie folgt einstellen: SPEAKER: B							
1	OFFSET	—	Einen Gleichspannungsmesser zu SPEAKER B anschließen.	VOLUME: 0	VR1 (L) VR2 (R)	0V	(a)
2	LEERLAUF-STROM	—	Einen Gleichspannungsmesser über R85 (L) R86 (R) anschließen.	VOLUME: 0	VR3 (L) VR4 (R)	9mV	(b)

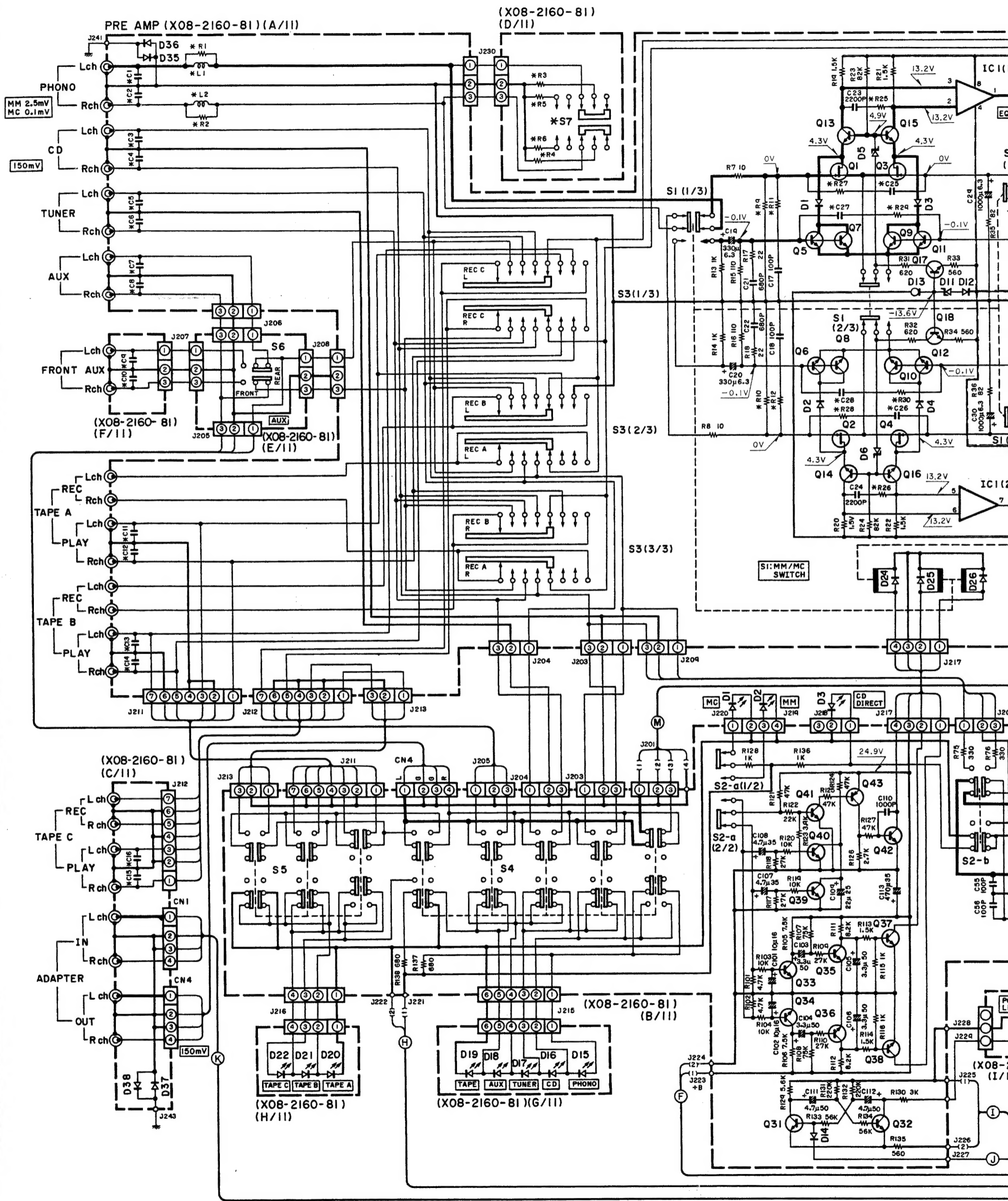


KA-1100SD KA-1100SD

PC BOARD

PRE AMPLIFIER (X08-2160-81)





2SA1123A 2SC1845
2SA1124A 2SC2003
2SA733 2SC2320
2SA954 2SC2557
2SA988 2SC2631A
2SA992 2SC2632
2SA999 2SC2632A
2SC1841 2SC945

2SD571

2SA1112*1
2SB514
2SC2592*1
2SD313V-AL

2SA957

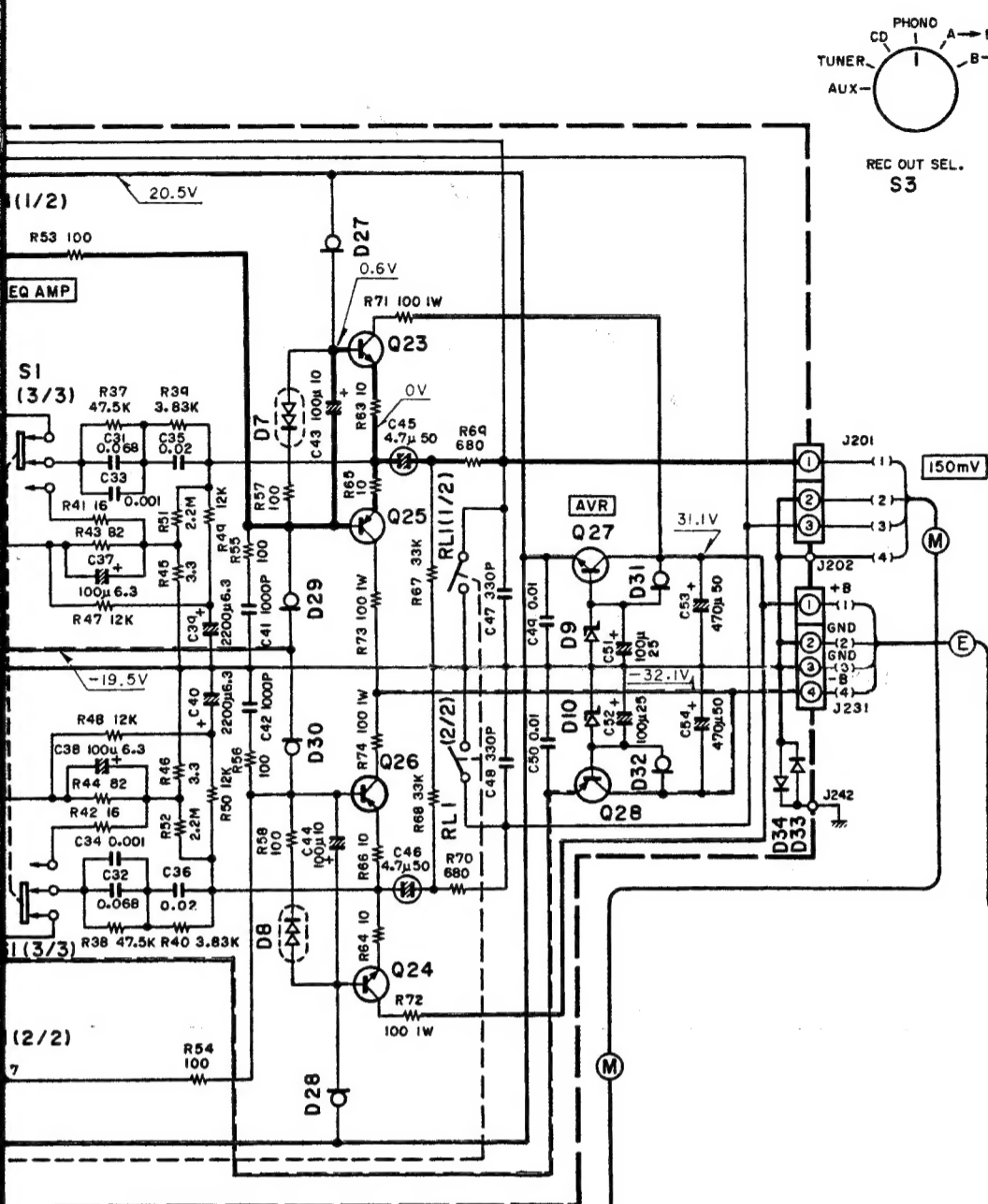
2SA1349

2SK170

UPA68H

NE5532P
NJM2041D-D
NJM5532D

UPD4027BC



(X08-2160-81)

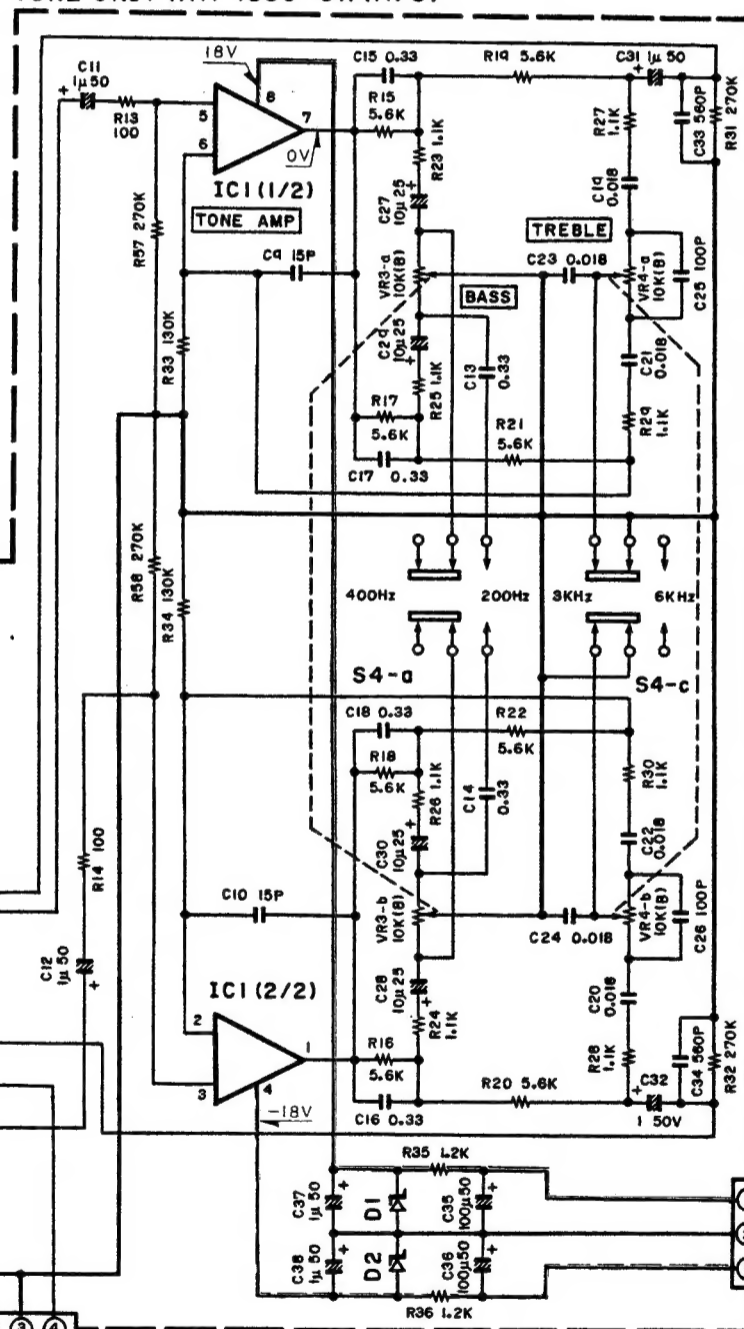
IC1 : NJM5532D or NE5532P

Q1~4 : 2SK170 (BL,V)
Q5~12 : 2SC2557 (S,T)
Q13~18, 31~36, 39~42 : 2SC945 (A) (Q,P)
Q23, 24 : 2SC2003 (L,K)
Q25, 26 : 2SA954 (L,K)
Q27 : 2SD313V-AL
Q28 : 2SB514 (E,F)
Q37, 38 : 2SD571 (L,K)
Q43 : 2SA992 (F,E)

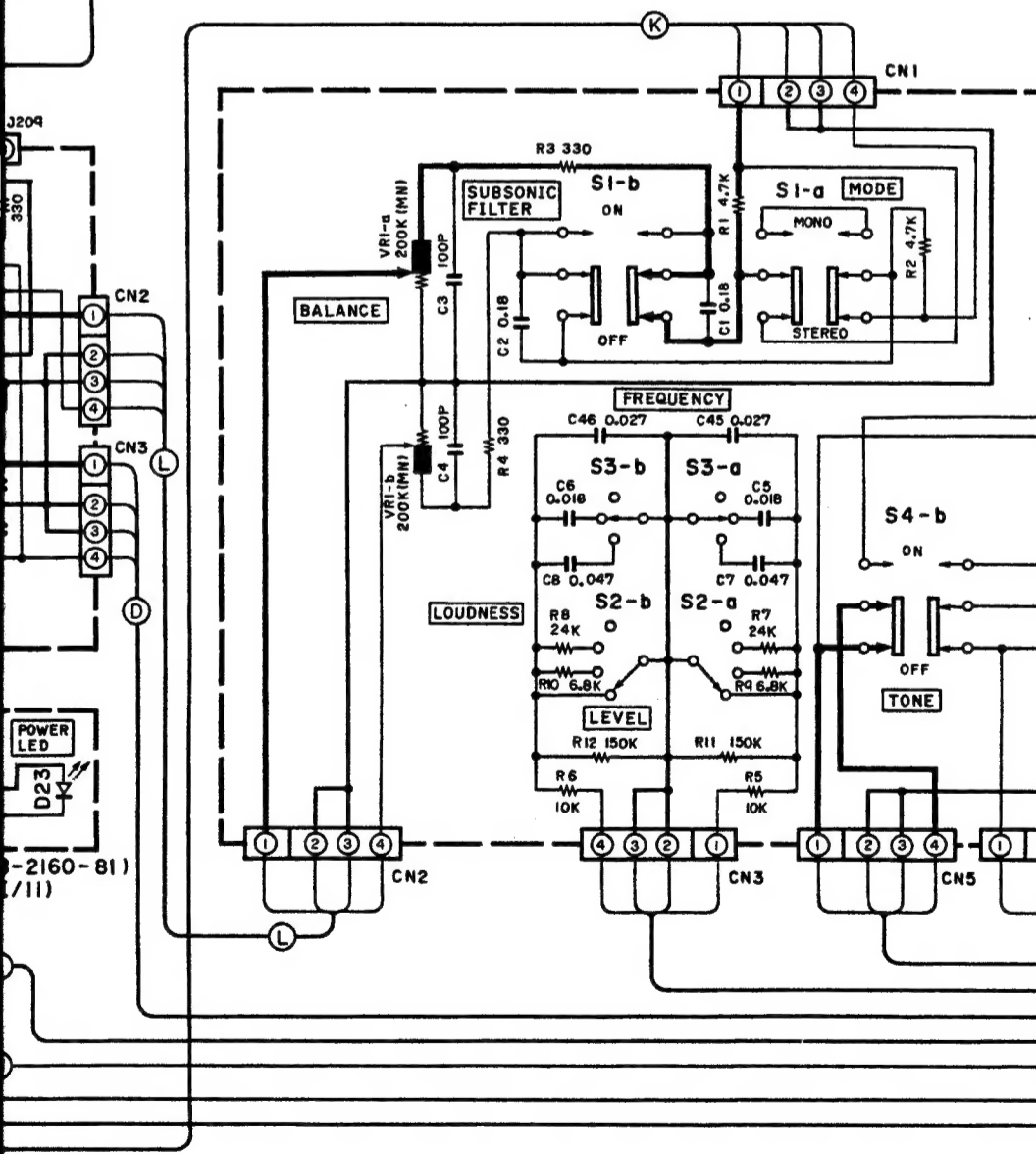
D1~4, 12, 24 : 1S2076 or 1S1555
D5, 6, 11 : RD5.6J (B2)
D7, 8 : MA27W (A)
D9, 10 : RD20 (B2)
D13 : E-152
D14 : 1S2076A
D15~19 : B30-1012-05
D20~22 : B30-1010-05
D23 : B30-0483-05
D25, 26 : DSM1A1
D27~32 : E-272
D33~38 : ISS176

DESTI- NATION	K,P,U,M UE	X,E
L1,2	NO	100μ
S7	YES	YES
R1	JUMPER	1.2K
R2,27,28	NO	1.2K
R3,4	100K	100K
R5,6	47K	47K
R9,10	100K	100K
R11,12	340	100
R25,26	68	120
R29,30	NO	68
C1~16	NO	120P
C25~28	NO	2200P

TONE UNIT (X11-1890-01) (A/5)



(X11-1890-01) IC1 : NJM2041D-D
D1,2 : RD18J (B2, B3)



KA-1100SD(K) (A/2)

UPC1237H

TA2030

DAT0612N
DAT0612P
DAT1018N
DAT1018P

DC voltages are as measured with a high impedance voltmeter with no signal input. Values may vary slightly due to variations between individual instruments or/and units.

CAUTION: For continued safety, replace safety critical components only with manufacturer's recommended parts (refer to parts list). Δ Indicates safety critical components. To reduce the risk of electric shock, leakage-current or resistance measurements shall be carried out (exposed parts are acceptably insulated from the supply circuit) before the appliance is returned to the customer.

KA-1100SD

KENWOOD

(X07-2200-11)

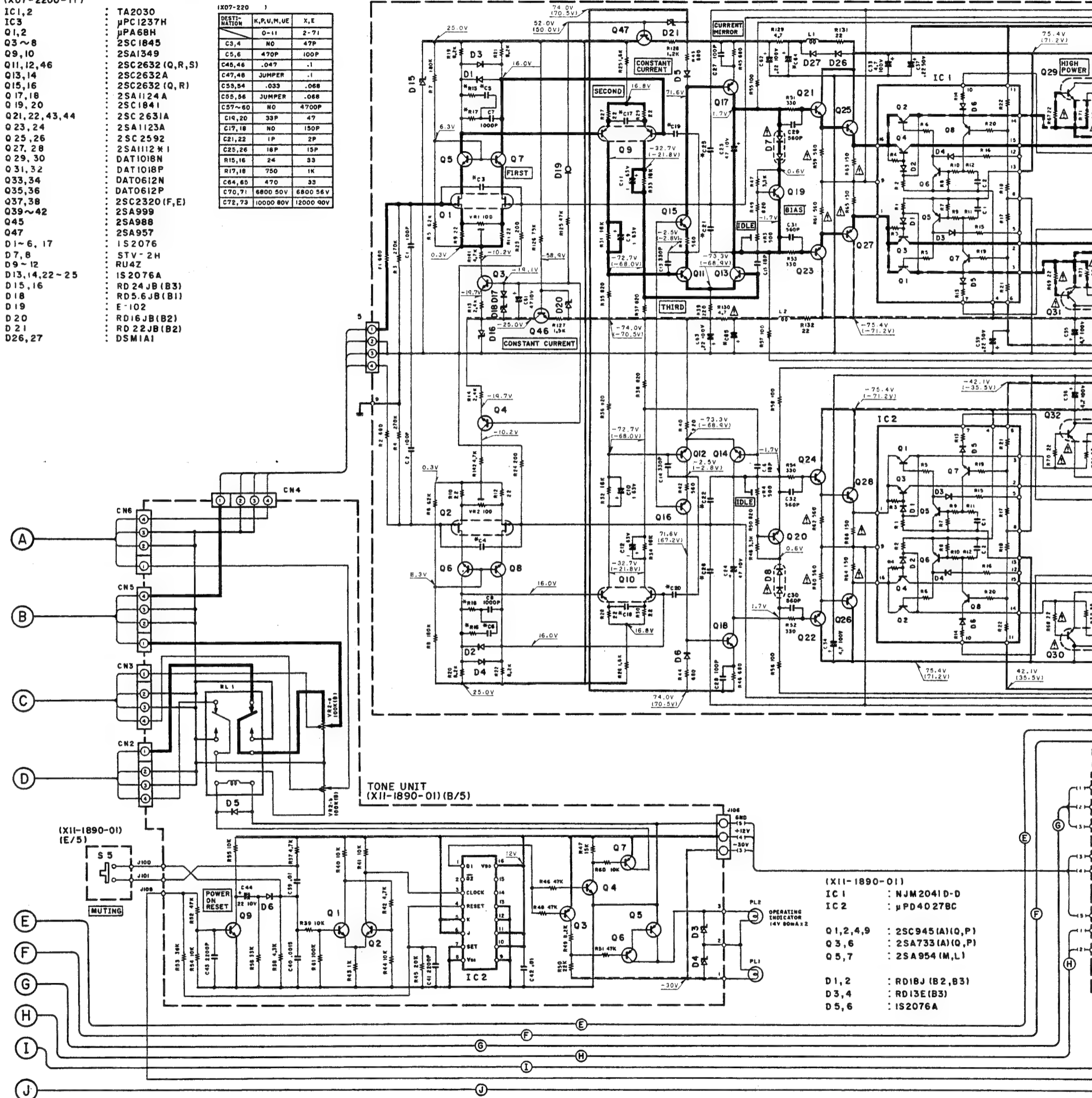
IC1,2
Q1,2
Q3~8
Q9,10
Q11,12,46
Q13,14
Q15,16
Q17,18
Q19,20
Q21,22,43,44
Q23,24
Q25,26
Q27,28
Q29,30
Q31,32
Q33,34
Q35,36
Q37,38
Q39~42
Q45
Q47
D1~6,17
D7,8
D9~12
D13,14,22~25
D15,16
D18
D19
D20
D21
D26,27

TA2030
μPC1237H
μPA68H
2SC1845
2SA1349
2SC2632 (Q,R,S)
2SC2632A
2SC2632 (Q,R)
2SA1124A
2SC1841
2SC2631A
2SA1123A
2SC2592
2SA1112*1
DAT1018N
DAT1018P
DAT0612N
DAT0612P
2SC2320 (F,E)
2SA999
2SA988
2SA957
IS2076
STV-2H
RU4Z
IS2076A
RD24JB (B3)
RD5.6JB (B1)
E-102
RD16JB (B2)
RD22JB (B2)
DSM1A1

(X07-220)

DESTINATION	K,P,V,M,UE	X,E
C3,4	NO	47P
C5,6	470P	100P
C48,46	.047	.1
C47,48	JUMPER	.1
C58,54	.033	.068
C55,56	JUMPER	.068
C57~60	NO	4700P
C19,20	33P	47
C17,18	NO	150P
C21,22	1P	2P
C25,26	16P	15P
R15,16	24	33
R17,18	750	1K
C64,65	470	33
C70,71	6800 50V	6800 56V
C72,73	10000 80V	12000 90V

MAIN AMP (X07-2200-11)



2SA1123A
2SA1124A
2SA733
2SA954
2SA988
2SA992
2SA999
2SC1841

2SC1845
2SC2003
2SC2320
2SC2557
2SC2631A
2SC2632
2SC2632A
2SC945

2SD571

2SA1112*1
2SB514
2SC2592*1
2SD313V-AL

2SA957

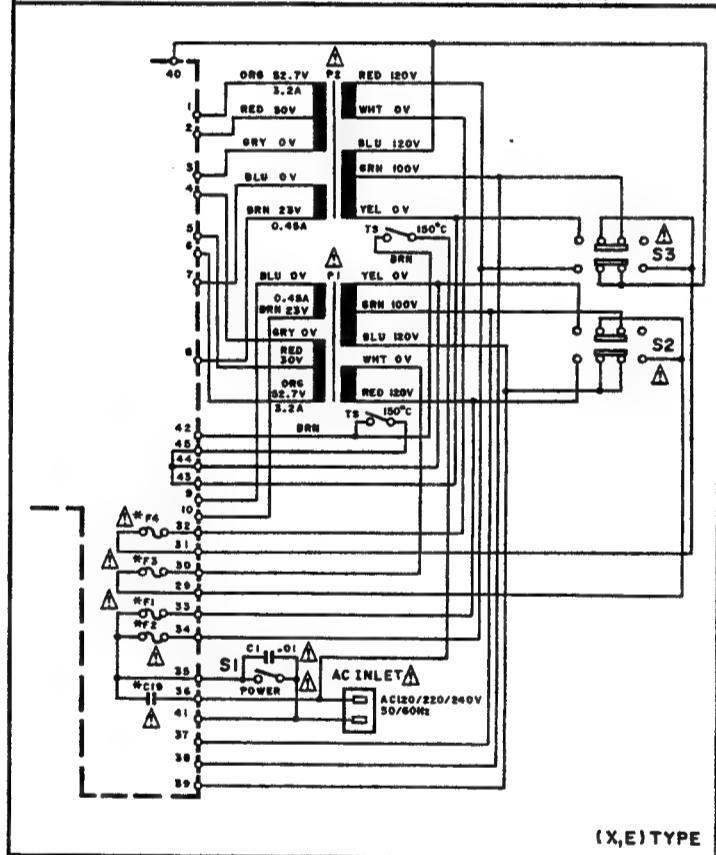
2SA1349

2SK170

UPA68H

NE5532P
NJM2041D-D
NJM5532D

UPD4027BC



CAUTION: For continued safety, replace safety critical components only with manufacturer's recommended parts (refer to parts list). Δ Indicates safety critical components. To reduce the risk of electric shock, leakage-current or resistance measurements shall be carried out (exposed parts are acceptably insulated from the supply circuit) before the appliance is returned to the customer.

KENWOOD

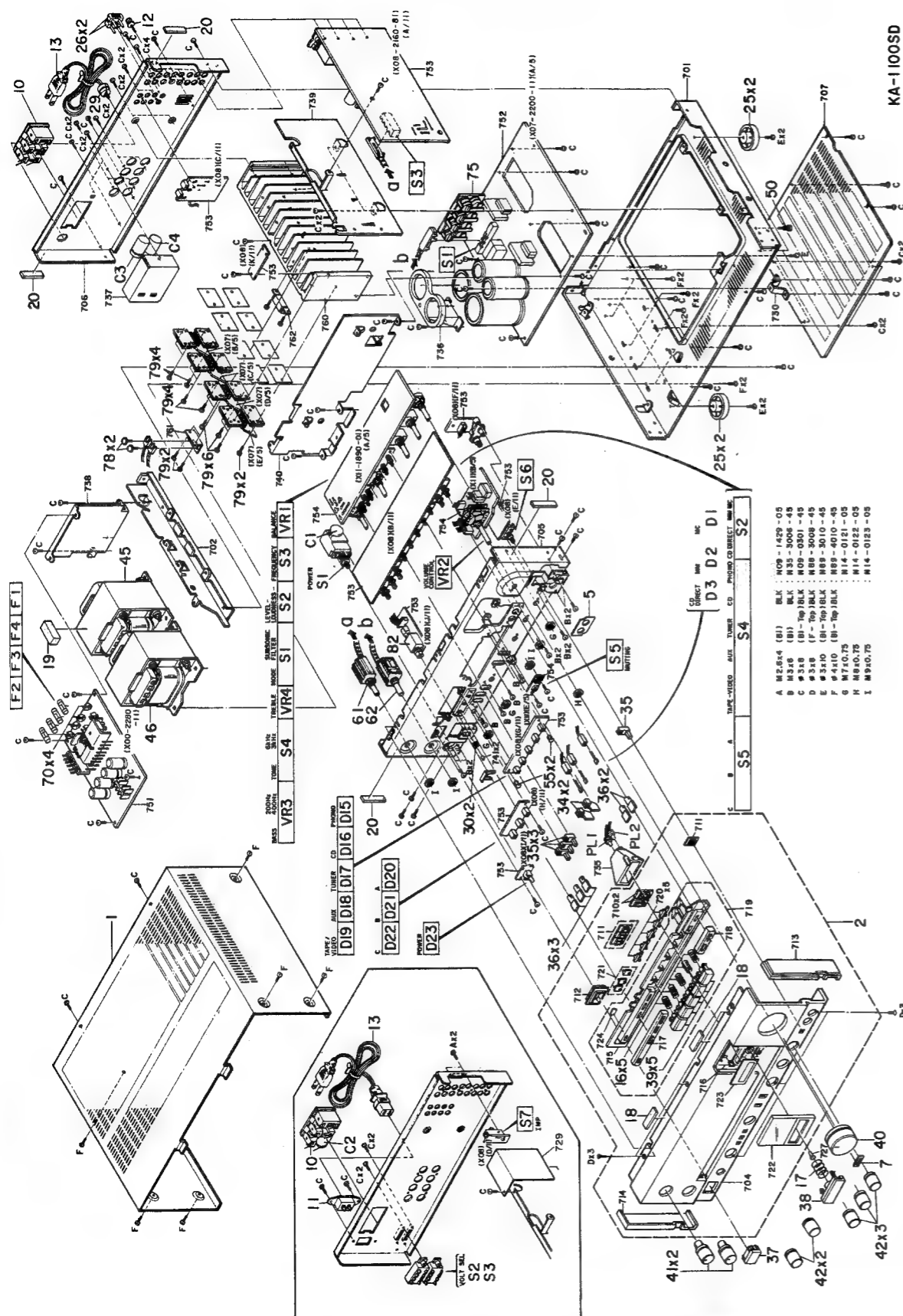
KA-1100SD

AC120V-220V-240V
S2,3 LINE VOLTAGE



Refer to the schematic diagram for the values of resistors and capacitors.
The PC board drawing is viewing from the side easy to check.

EXPLODED VIEW



Parts with the exploded numbers larger than 700 are not supplied.

PARTS LIST

* New Parts

Parts without Parts No. are not supplied.

Les articles non mentionnés dans le Parts No. ne sont pas fournis.

Teile ohne Parts No. werden nicht geliefert.

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名 / 規格	Desti- nation 仕向	Re- marks 備考
KA-1100SD						
1	1A	*	A01-1341-02	METALLIC CABINET		
2	2A	*	A20-4028-01	PANEL ASSY		
5	2B		B03-0229-04	DRESSING PLATE(FRONT AUX JACK)		
7	2A		B43-0270-04	BADGE(GOLD) SUPER DLD		
			B46-0092-03	WARRANTY CARD	K	
			B46-0093-03	WARRANTY CARD	P	
			B46-0094-03	WARRANTY CARD	U	
			B46-0095-03	WARRANTY CARD	X	
			B46-0096-03	WARRANTY CARD	E	
		*	B50-5335-00	INSTRUCTION MANUAL(ENGLISH)		
		*	B50-5336-00	INSTRUCTION MANUAL(FRENCH)	PMXE	
		*	B50-5337-00	INSTRUCTION MANUAL(SPANISH)	M	
		*	B50-5338-00	INSTRUCTION MANUAL(G,D,I)	E	
		*	B50-5353-00	INSTRUCTION MANUAL(ARABIC)	M	
			B58-0222-14	CAUTION CARD(PRESET 220V)	U	
			B58-0223-04	CAUTION CARD(PRESET 120V)	U	
			B58-0245-23	CAUTION CARD(FTZ)	E	
			B58-0269-04	CAUTION CARD	K	
			B59-0092-00	SERVICE DIRECTORY	U	
D1	2		B30-0469-05	LED(SLP-162B)RED(MM,MC)		
D3	2B		B30-0470-05	LED(SLP-262B)GREEN(CD)		
PL1	2		B30-0445-15	LAMP(14V D.08A)MUTING IND		
Δ C1	1B		C91-0023-05	CERAMIC 0.01UF AC250V	UMUE	
Δ C2	1A		C91-0647-05	CERAMIC 0.01UF P	KPXE	
Δ C3	1C	*	C90-1299-05	ELECTRO 5600UF 42WV		
Δ 10	1C		E03-0069-05	AC OUTLET	KPUM	
Δ 10	1C		E03-0069-05	AC OUTLET	U	
Δ 11	1A		E03-0058-05	AC INLET	UMUEX	
Δ 11	1A		E03-0058-05	AC INLET	E	
Δ 12	1C		E21-0006-25	BINDING POST(GND)		
Δ 13	1C		E30-0290-05	AC POWER CORD	KP	
Δ 13	1C		E30-0726-05	AC POWER CORD (INLET)	E	
Δ 13	1C		E30-0729-05	AC POWER CORD (INLET)	X	
Δ 13	1C		E30-0852-05	AC POWER CORD (INLET)	UMUE	
16	2A		G01-0488-04	COMPRESSION SPRING(PANEL ASSY)		
17	2A		G01-0489-04	COMPRESSION SPRING(MUTING KNOB)		
18	2A		G10-0057-04	NON-WOVEN FABRIC(A20-4028-01AS)		
19	1B		G11-0145-04	SOFT TAPE(40X16X12)POWER TRANS		
20	1B,1C		G11-0192-04	CUSHION (40X8X2) SIDE		
		*	H01-5229-04	ITEM CARTON CASE		
			H10-1726-12	POLYSTYRENE FOAMED FIXTURE		
			H25-0078-04	PROTECTION BAG(235X315)		
			H25-0204-04	PROTECTION BAG(100X315X0.05)		
			H25-0225-04	PROTECTION BAG		
25	2B,2C	*	J02-0154-05	FOOT (SILVER RING)		
26	1C		J12-0094-05	PIN (SHORTING PIN)		
29	1C		J42-0083-05	POWER CORD BUSHING	KP	
30	2B	*	J42-0118-05	BUSHING(TAPE A,B,C SW)		
			J61-0307-05	WIRE BAND		
34	2B		K27-0915-04	KNOB(BUTTON)MODE,SUBSONIC FIL		

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35	2B		K27-0916-04	KNØB (BUTTON) BASS, TONE, TREB, AUX		
36	2A, 2B		K27-0965-04	KNØB (BUTTON) A, B, C, CD, MM/MC		
37	2A		K27-1141-04	KNØB (BUTTON) POWER		
38	2A		K27-1248-13	KNØB (BUTTON) MUTING		
39	2A		K27-1278-03	KNØB (BUTTON) SELECTOR (PNL ASSY)		
40	2A	*	K29-1821-04	KNØB VOLUME CONTROL		
41	2A	*	K29-1822-04	KNØB REC OUT, SPEAKERS		
42	2A		K29-1823-04	KNØB BASS, TRE, LEV, FREQ, BAL		
Δ 45	1B	*	L01-2911-05	POWER TRANSFORMER	KP	
Δ 45	1B		L01-2916-15	POWER TRANSFORMER	UMUEX	
Δ 45	1B		L01-2916-15	POWER TRANSFORMER	E	
Δ 46	1B	*	L01-2921-05	POWER TRANSFORMER	KP	
Δ 46	1B		L01-2926-15	POWER TRANSFORMER	UMUEX	
Δ 46	1B		L01-2926-15	POWER TRANSFORMER	E	
50	2C		N09-0292-05	STEPPED SCREW (3X19) GND		
55	2B		N29-0035-05	PUSH RIVET (3.5X5.5)		
61	1B		S90-0063-05	REMOTE SWITCH SHAFT (REC OUT)		
62	1B		S90-0067-05	REMOTE SWITCH SHAFT (SPEAKER)		
Δ S1	1B		S40-1014-05	PUSH SWITCH (POWER TYPE)	UMUEX	
Δ S1	1B		S40-1015-05	PUSH SWITCH (POWER TYPE)	KP	
Δ S1	1B		S40-1047-05	PUSH SWITCH (POWER TYPE)	E	
Δ S2 .3	1C		S31-2082-05	SLIDE SWITCH (AC VOLT. SEL)	UMUEX	
Δ S2 .3	1C		S31-2082-05	SLIDE SWITCH (AC VOLT. SEL)	E	
POWER SUPPLY (X00-2280-11)						
C1 -6			CK45E2H103P	CERAMIC 0.01UF P		
C7 -10			CE04FW1H102MEL	ELECTRØ 1000UF 50WV		
C11			CE04FW1V101MEL	ELECTRØ 100UF 35WV		
C12			CE04FW1H100MEL	ELECTRØ 10UF 50WV		
C14			CE04FW1V101MEL	ELECTRØ 100UF 35WV		
C15			CE04FW1H101MEL	ELECTRØ 100UF 50WV		
C16 .17			CE04FW1C470MEL	ELECTRØ 47UF 16WV		
C18			CE04FW1H101MEL	ELECTRØ 100UF 50WV		
Δ C19			C91-0079-05	CERAMIC 0.01UF AC125V	XE	
Δ F1	1B		F05-4022-05	FUSE 250V 4A	UMUE	
Δ F1	1B		F05-4024-05	FUSE (SEMKØ) 250V F4A	XE	
Δ F1	1B		F06-5022-05	FUSE (UL) 250V 5A	KP	
Δ F2 .3	1B		F05-2023-05	FUSE 250V 2A	UMUE	
Δ F2 .3	1B		F05-2029-05	FUSE (SEMKØ) 250V F2A	XE	
Δ F4	1B		F05-4022-05	FUSE 250V 4A	UMUE	
Δ F4	1B		F05-4024-05	FUSE (SEMKØ) 250V F4A	XE	
Δ F4	1B		F06-5022-05	FUSE (UL) 250V 5A	KP	
70	1B		J13-0041-05	FUSE CLIP	KPUM	
70	1B		J13-0041-05	FUSE CLIP	UE	
70	1B		J13-0054-05	FUSE CLIP	XE	
R1		*	RD14GB2E391JTS	FL-PROOF RD 390 J 1/4W		
R2		*	RD14AB2E391JTS	FL-PROOF RD 390 J 1/4W		
R3 .4		*	RS14DB3D220JTE	FL-PROOF RS 22 J 2W		
R5		*	RD14AB2E2R2JTS	FL-PROOF RD 2.2 J 1/4W		
R6		*	RD14GB2ESR6JTS	FL-PROOF RD 5.6 J 1/4W		
R7		*	RD14AB2E153JTS	FL-PROOF RD 15K J 1/4W		
R9		*	RS14DB3D820JTE	FL-PROOF RS 82 J 2W		
R10		*	RS14DB3A152JTE	FL-PROOF RS 1.5K J 1W		

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R11 R13		*	RD14AB2E4R7JTS RS14DB3D122JTE	FL-PROOF RD 4.7 J 1/4W FL-PROOF RS 1.2K J 2W		
D1 D2 D3 -7 D8 D10			S15VB20 D5FB20 DSM1A1 RD27E(B1) RD13E(B1)	DIODE DIODE DIODE ZENER DIODE ZENER DIODE		
D11 ,12 D11 ,12 Q1 Q2 Q3			1S1555 1S2076 2SD313V-AL 2SC2003(L,K) 2SD313V-AL	DIODE DIODE TRANSISTOR TRANSISTOR TRANSISTOR		
Q4 Q4			2SC2320 2SC945(A)	TRANSISTOR TRANSISTOR		
POWER AMPLIFIER (X07-2200-11)						
C1 ,2 C1 ,2 C1 ,2 C3 ,4 C5 ,6			CC45FSL1H101J CQ09FS1H101JZS CQ09FS1H101JZS CC45FSL1H470J CC45FSL1H101J	CERAMIC 100PF J POLYSTY 100PF J POLYSTY 100PF J CERAMIC 47PF J CERAMIC 100PF J	XE KPUM UE XE XE	
C5 ,6 C5 ,6 C7 ,8 C9 -12 C13 ,14			CK45FB1H471K CK45FB1H471K CK45FB1H102K CED4FW1J010MEL CK45B2H331K	CERAMIC 470PF K CERAMIC 470PF K CERAMIC 0.001UF K ELECTRO 1.0UF 63WV CERAMIC 330PF K	KPUM UE	
C15 ,16 C15 ,16 C15 ,16 C19 C19 ,20			CC45FSL1H180J C91-0169-05 C91-0169-05 CC45FSL1H470J CC45FSL1H330J	CERAMIC 18PF J POLYSTY 18PF K POLYSTY 18PF K CERAMIC 47PF J CERAMIC 33PF J	XE KPUM UE XE KPUM	
C19 ,20 C20 C21 ,22 C21 ,22 C21 ,22			CC45FSL1H330J CC45FSL1H470J CC45FSL1H010C CC45FSL1H010C CC45FSL1H020C	CERAMIC 33PF J CERAMIC 47PF J CERAMIC 1.0PF C CERAMIC 1.0PF C CERAMIC 2.0PF C	UE XE KPUM UE XE	
C23 C24 C25 ,26 C25 ,26 C25 ,26			CED4FW1A470MEL CED4FW1A470MEL CC45FSL1H150J C91-0169-05 C91-0169-05	ELECTRO 47UF 10WV ELECTRO 47UF 10WV CERAMIC 15PF J POLYSTY 18PF K POLYSTY 18PF K	XE KPUM UE	
C27 ,28 C29 -32 C33 -36 C37 C39			CC45FSL1H101J CK45FB1H561K CED4FW2A4R7MEL CED4FW1HR22MEL CED4FW1HR22MEL	CERAMIC 100PF J CERAMIC 560PF K ELECTRO 4.7UF 100WV ELECTRO 0.22UF 50WV ELECTRO 0.22UF 50WV		
C41 ,42 C45 ,46 C45 ,46 C45 ,46 C47 ,48			CF92FV1H473J CQ93FM1H104J CQ93FM1H473J CQ93FM1H473J CQ93FM1H104J	MF 0.047UF J MYLAR 0.10UF J MYLAR 0.047UF J MYLAR 0.047UF J MYLAR 0.10UF J	XE KPUM UE XE	
C49 ,50 C51 ,52 C53 ,54 C53 ,54			CED4HW1E4R7MEL CQ93FM1H334J CQ93FM1H333J CQ93FM1H333J	NP-ELEC 4.7UF 25WV MYLAR 0.33UF J MYLAR 0.033UF J MYLAR 0.033UF J	KPUM UE	

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C53 ,54 C55 ,56 C57 -60 C61 C62 ,63			CQ93FM1H683J CQ93FM1H683J CK45FB1H472K CED4FW1A470MEL CED4FW2AR22MEL	MYLAR 0.068UF J MYLAR 0.068UF J CERAMIC 4700PF K ELECTRO 47UF 10WV ELECTRO 0.22UF 100WV	XE XE XE XE	
C64 ,65 C66 C67 C68 C69		*	CED4FW2A330MEL CED4HW1A470MEL CED4FW1A220MEL CED4FW1V4R7MEL CED4GW1C470MEL	ELECTRO 33UF 100WV NP-ELEC 47UF 10WV ELECTRO 22UF 10WV ELECTRO 4.7UF 35WV LL-ELEC 47UF 16WV		
C70 ,71 C72 ,73 C74 C75		*	C90-1305-05 C90-1301-05 CC45FSL1H271J CQ93FM1H223J	ELECTRO 6800UF 63WV ELECTRO 12000UF 90WV CERAMIC 270PF J MYLAR 0.022UF J		
75	2C		E20-0821-05	LOCK TERMINAL BOARD(8P)SPEAKER		
-			J61-0307-05	WIRE BAND		
L1 ,2 L3 ,4			L33-0275-05 L39-0085-05	CHOKER COIL PHASE-COMPENSATION COIL		
78 79	1B 1B,1C		ND9-0287-05 ND9-1202-05	SEMS(TAPTITE SCREW)3X8(VARIST) TAPPING SCREW 3X14(TR)		
R23 ,24 R39 ,40 R41 ,42 R43 ,44 R45 ,46		*	RN14BK2C2000FTS RD14GB2E221JTS RD14GB2E561JTS RD14AB2E681JTS RD14GB2E681JTS	RN 200.0 F 1/6W FL-PROOF RD 220 J 1/4W FL-PROOF RD 560 J 1/4W FL-PROOF RD 680 J 1/4W FL-PROOF RD 680 J 1/4W		
R51 -54 R59 -62 R63 -66 R67 ,68 R69 -72			RD14GB2E331JTS RD14AB2E561JTS RD14GB2E151JTS RD14GB2E220JTS RD14AB2E220JTS	FL-PROOF RD 330 J 1/4W FL-PROOF RD 560 J 1/4W FL-PROOF RD 150 J 1/4W FL-PROOF RD 22 J 1/4W FL-PROOF RD 22 J 1/4W		
R73 ,74 R75 ,76 R77 -80 R81 ,82 R83 -86			RD14GB2E220JTS RD14AB2E220JTS RD14GB2E220JTS RD14AB2E220JTS R90-0187-05	FL-PROOF RD 22 J 1/4W FL-PROOF RD 22 J 1/4W FL-PROOF RD 22 J 1/4W FL-PROOF RD 22 J 1/4W MULTI-COMP 0.22X2 K 5W		
R111 R112 R113-116 R117 R118		*	RS14KB3D220JTE RS14DB3D220JTE RN14BK2C9102FTS RS14KB3A2R7JTE RS14DB3A2R7JTE	FL-PROOF RS 22 J 2W FL-PROOF RS 22 J 2W RN 91.0K F 1/6W FL-PROOF RS 2.7 J 1W FL-PROOF RS 2.7 J 1W		
R119,120 R121,122 R127 R128 R129		*	RD14AB2E330JTS RS14KB3D180JTE RD14AB2E152JTS RS14DB3A122JTE RD14AB2E4R7JTS	FL-PROOF RD 33 J 1/4W FL-PROOF RS 18 J 2W FL-PROOF RD 1.5K J 1/4W FL-PROOF RS 1.2K J 1W FL-PROOF RD 4.7 J 1/4W		
R130 R131 R132 R140 VR1 ,2		*	RD14GB2E4R7JTS RD14AB2E220JTS RD14GB2E220JTS RS14KB3D122JTE R12-0502-05	FL-PROOF RD 4.7 J 1/4W FL-PROOF RD 22 J 1/4W FL-PROOF RD 22 J 1/4W FL-PROOF RS 1.2K J 2W TRIMMING POT(100)0FFSET		
VR3 ,4			R12-0302-05	TRIMMING POT(500)IDLE		

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RL1 ,2 S1 TS1	1C	*	S51-2045-05 S90-0068-05 S59-1071-05	MAGNETIC RELAY SLIDE SWITCH(SPEAKERS) THERMAL SWITCH		
D1 ,2 D3 -6 D7 ,8 D9 -12 D13 ,14			1S2076 1S2076 STV-2H RU4Z 1S2076A	DIODE DIODE VARISTOR DIODE DIODE		
D15 ,16 D17 D18 D19 D20			RD24J(B2,B3) 1S2076 RD5.6J(B1) E-102 RD16J(B2)	ZENER DIODE DIODE ZENER DIODE CONSTANT CURRENT DIODE ZENER DIODE		
D21 D22 -25 IC1 ,2 IC3 Q1 ,2			RD22J(B2) 1S2076A TA2030 UPC1237H UPA68H(K,L)	ZENER DIODE DIODE IC BUFFER IC PROTECTION DUAL FET		
Q3 -8 Q9 ,10 Q11 ,12 Q13 ,14 Q15 ,16		*	2SC1845 2SA1349 2SC2632(Q,R,S) 2SC2632A 2SC2632(Q,R)	TRANSISTOR DUAL TRANSISTOR TRANSISTOR TRANSISTOR TRANSISTOR		
Q17 ,18 Q19 ,20 Q21 ,22 Q23 ,24 Q25 ,26		*	2SA1124A 2SC1841 2SC2631A 2SA1123A 2SC2592*1	TRANSISTOR TRANSISTOR TRANSISTOR TRANSISTOR TRANSISTOR		
Q27 ,28 Q29 ,30 Q31 ,32 Q33 ,34 Q35 ,36			2SA1112*1 DAT1018N DAT1018P DAT0612N DAT0612P	TRANSISTOR TRANSISTOR TRANSISTOR TRANSISTOR TRANSISTOR		
Q37 ,38 Q39 Q40 -42 Q43 ,44 Q45			2SC2320(E,F) 2SA979 2SA979(E,F) 2SC2631A 2SA988	TRANSISTOR TRANSISTOR TRANSISTOR TRANSISTOR TRANSISTOR		
Q46 Q47			2SC2632(Q,R,S) 2SA957	TRANSISTOR TRANSISTOR		
PRE AMPLIFIER (X08-2160-81)						
D15 -19 D20 -22 D23	1A,1B 1A,1B 1A		B30-1012-05 B30-1010-05 B30-0483-05	LED(SLP-981C-50) SELECTOR LED(SLP-281F-50U) TAPE A,B,C LED(SLP-170B) POWER		
C1 -3 C4 C5 C6 ,7 C8 ,9			CC45FSL1H121J CC45FSL1H121J CC45FSL1H121J CC45FSL1H121J CC45FSL1H121J	CERAMIC 120PF J CERAMIC 120PF J CERAMIC 120PF J CERAMIC 120PF J CERAMIC 120PF J	XE XE XE XE XE	
C10 C11 -16 C17 ,18 C19 ,20 C21 ,22			CC45FSL1H121J CC45FSL1H121J CC45FSL1H101J CE04FW0J331M CK45FB1H681K	CERAMIC 120PF J CERAMIC 120PF J CERAMIC 100PF J ELECTRO 330UF 6.3WV CERAMIC 680PF K	XE XE	

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C23 -28			CK45FB1H222K	CERAMIC 2200PF K	XE KPUM UE	
C23 ,24			CK45FB1H222K	CERAMIC 2200PF K		
C23 ,24			CK45FB1H222K	CERAMIC 2200PF K		
C29 ,30		*	CE04FW0J102MEL	ELECTRO 1000UF 6.3WV		
C31 ,32		*	CQ93HP2A683G	MYLAR 0.068UF G		
C33 ,34		*	CQ93HP2A102G	MYLAR 1000PF G		
C35 ,36		*	CQ93HP2A203G	MYLAR 0.020UF G		
C37 ,38			CE04FW1A101MEL	ELECTRO 100UF 10WV		
C39 ,40		*	CE04FW0J222MEL	ELECTRO 2200UF 6.3WV		
C41 ,42			CK45FB1H102K	CERAMIC 0.001UF K		
C43 ,44			CE04FW1A101MEL	ELECTRO 100UF 10WV		
C45 ,46			CE04HW1H4R7MEL	NP-ELEC 4.7UF 50WV		
C47 ,48			CQ09FS1H331JZS	POLYSTY 330PF J		
C49 ,50			CF92FV1H103J	MF 0.010UF J		
C51 ,52			CE04FW1E101MEL	ELECTRO 100UF 25WV		
C53 ,54		*	CE04FW1H471MEL	ELECTRO 470UF 50WV		
C55 ,56			CC45FSL1H101J	CERAMIC 100PF J		
C57			CK45B1H472K	CERAMIC 0.0047UF K		
C58 ,59			CK45B1H471K	CERAMIC 470PF K		
C101,102			CE04FW1C100MEL	ELECTRO 10UF 16WV		
C103-106			CE04FW1H3R3MEL	ELECTRO 3.3UF 50WV		
C107,108			CE04FW1H4R7MEL	ELECTRO 4.7UF 50WV		
C109			CE04FW1E220MEL	ELECTRO 22UF 25WV		
C110			CK45FB1H102K	CERAMIC 0.001UF K		
C111,112			CE04FW1H4R7MEL	ELECTRO 4.7UF 50WV		
C113		*	C90-1297-05	ELECTRO 470UF 35WV		
B2	1B		E11-0103-05	PHONE JACK(HEADPHONE)		
E1		*	E13-0499-05	PHONE JACK(4P)PHONE,CD		
E2			E13-0497-05	PHONE JACK(4P)TUNER,AUX		
E3			E13-0814-05	PHONE JACK(8P)TAPE A,TAPE B		
E4			E13-0225-05	PHONE JACK(2P)FRONT AUX		
E5			E13-0818-05	PHONE JACK(8P)TAPE C,PRE I/O		
L1 ,2			L40-1011-43	SMALL FIXED INDUCTOR(100UH,K)	XE	
R35 ,36		*	RN14BK2E82ROFTS	RN 82.0 F 1/4W		
R37 ,38		*	RN14BK2E4752FTS	RN 47.5K F 1/4W		
R39 ,40		*	RN14BK2E3831FTS	RN 3.83K F 1/4W		
R45 ,46		*	RN14BK2E3R30GTS	RN 3.30 G 1/4W		
R63 -66			RD14GB2E100JTS	FL-PROOF RD 10 J 1/4W		
R71 -74			RS14DB3A101J	FL-PROOF RS 100 J 1W		
R139,140			RS14DB3D561J	FL-PROOF RS 560 J 2W		
RL1			S51-2061-05	REED RELAY		
S1			S90-0065-05	ELECTROMAGNETIC SW MM/MC		
S2	2B	*	S42-2117-05	MULTIPLE PUSH SW(2KEY)CD,MM/MC		
S3	1C	*	S90-0078-05	SLIDE SWITCH REC OUT		
S4	2B		S42-5033-05	MULTIPLE PUSH SW(5KEY)SELECTOR		
S5	2B	*	S42-3086-05	MULTIPLE PUSH SW(3KEY)A,B,C		
S6	2B		S40-2122-05	PUSH SWITCH AUX		
S7	1C		S31-2059-05	SLIDE SWITCH PHONE IMP		
D1 -4			1S1555	DIODE		
D1 -4			1S2076	DIODE		
D5 ,6			RD5.6J(B2)	ZENER DIODE		
D7 ,8			MA27W(A)	VARISTOR		

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D9 ,10 D11 D12 D12 D13			RD20J(B2) RD5.6J(B2) 1S1555 1S2076 E-152	ZENER DIODE ZENER DIODE DIODE DIODE CONSTANT CURRENT DIODE		
D14 D24 D24 D25 ,26 D27 -32		*	1S2076A 1S1555 1S2076 WD6B E-272	DIODE DIODE DIODE DIODE CONSTANT CURRENT DIODE		
D33 -38 IC1 IC1 Q1 -4 Q5 -12			1S5176 NE5532P NJM5532D 2SK170(BL,V) 2SC2557(S,T)	DIODE IC OP AMP IC OP AMP FET TRANSISTOR		
Q13 -18 Q23 ,24 Q25 ,26 Q27 Q28			2SC945(A)(Q,P) 2SC2003(L,K) 2SA954(L,K) 2SD313V-AL 2SB514(E,F)	TRANSISTOR TRANSISTOR TRANSISTOR TRANSISTOR TRANSISTOR		
Q31 -36 Q37 ,38 Q39 -42 Q43			2SC945(A)(Q,P) 2SD571(L,K) 2SC945(A)(Q,P) 2SA992(F,E)	TRANSISTOR TRANSISTOR TRANSISTOR TRANSISTOR		
TONE AMPLIFIER (X11-1890-01)						
C1 ,2 C3 ,4 C5 ,6 C7 ,8 C9 ,10		*	CQ93AP2A184J CQ93FS1H101JZS CQ93FM1H183K CQ93FM1H473K CC45FSL1H150J	POLYPRQ 0.18UF J POLYSTY 100PF J MYLAR 0.018UF K MYLAR 0.047UF K CERAMIC 15PF J		
C11 ,12 C13 -18 C19 -21 C22 ,23 C24		*	CE04FW1H010MEL CQ93FM1H334K CQ93FM1H183K CQ93FM1H183K CQ93FM1H183K	ELECTRQ 1.0UF 50WV MYLAR 0.33UF K MYLAR 0.018UF K MYLAR 0.018UF K MYLAR 0.018UF K		
C25 C26 C27 -30 C31 ,32 C33 ,34			CC45FSL1H101J CC45FSL1H101J CE04FW1E100MEL CE04FW1H010MEL CK45FB1H561K	CERAMIC 100PF J CERAMIC 100PF J ELECTRQ 10UF 25WV ELECTRQ 1.0UF 50WV CERAMIC 560PF K		
C35 ,36 C37 ,38 C39 C40 C41			CE04FW1H101MEL CE04FW1H010MEL CK45FF1H103Z CK45FB1H152K CK45FB1H222K	ELECTRQ 100UF 50WV ELECTRQ 1.0UF 50WV CERAMIC 0.01UF Z CERAMIC 1500PF K CERAMIC 2200PF K		
C42 C43 C44 C45 ,46			CK45FF1H103Z CK45FB1H222K CE04FW1A220MEL CQ93FM1H273J	CERAMIC 0.01UF Z CERAMIC 2200PF K ELECTRQ 22UF 10WV MYLAR 0.027UF J		
-			J61-0307-05	WIRE BAND		
R1 ,2 R3 ,4 R5 ,6 R35 ,36		*	RN14BK2E4701FTS RN14BK2E3300FTS RN14BK2E1002FTS RS14GB3D122JMA	RN 4.70K F 1/4W RN 330.0 F 1/4W RN 10.0K F 1/4W FL-PROOF RS 1.2K J 2W		

E: Scandinavia & Europe H: Audio Club K: USA

P: Canada

S: South Africa

T: England

U: PX(Far East, Hawaii)

UE: AAFES(Europe)

X: Australia

M: Other Areas

⚠ indicates safety critical components.

PARTS LIST

※ New Parts
Parts without Parts No. are not supplied.
Les articles non mentionnes dans le Parts No. ne sont pas fournis.
Teile ohne Parts No. werden nicht geliefert.

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名 / 規格	Desti- nation 仕向	Re- marks 備考
VR1	1B		R06-5098-05	POTENTIOMETER(200KX2)BALANCE		
VR2	1B	*	R08-5053-05	POTENTIOMETER(100KX2)VOLUME		
VR3 ,4	1B		R06-3032-05	POTENTIOMETER(10KX2) BASS,TREB		
RL1		*	S51-2072-05	MAGNETIC RELAY		
S1	1B		S42-2082-05	MULTI PUSH SW(MODE,SUBSONIC)		
S2	1B		S29-2026-05	ROTARY SWITCH(LOUDNESS LEVEL)		
S3	1B		S29-2025-05	ROTARY SWITCH(LOUDNESS FREQ)		
S4	1B		S42-3064-05	MULTI PUSH SW(TONE,TURN FREQ)		
S5	2B		S40-1065-05	PUSH SWITCH (MUTING)		
D1 ,2		*	RD18J(B2,B3)	ZENER DIODE		
D3 ,4		*	RD13E(B3)	ZENER DIODE		
D5 ,6			1S2076A	DIODE		
IC1			NJM2041D-D	IC OP AMP		
IC2			UPD4027BC	IC J-K FLIP-FLOP		
Q1 ,2			2SC945(A)(Q,P)	TRANSISTOR		
Q3			2SA733(A)(Q,P)	TRANSISTOR		
Q4			2SC945(A)(Q,P)	TRANSISTOR		
Q5			2SA954(M,L)	TRANSISTOR		
Q6			2SA733(A)(Q,P)	TRANSISTOR		
Q7			2SA954(M,L)	TRANSISTOR		
Q9			2SC945(A)(Q,P)	TRANSISTOR		

E: Scandinavia & Europe H:Audio Club K: USA P: Canada
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UE: AAFES(Europe) X: Australia M: Other Areas

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SPECIFICATIONS

Power Amplifier Section

Power Output

150 watts* per channel minimum RMS, both channels driven at 8 ohms from 20 Hz to 20,000 Hz with no more than 0.004% total harmonic distortion.

Both Channels Driven into

8 ohms at 1 kHz 160 W + 160W

Dynamic Power Output into

4 ohms 368 W

Total Harmonic Distortion

(20 Hz to 20,000 Hz) AUX input to

SPEAKER output 0.004% at rated power
into 8 ohms
0.003% at 1/2 rated
power into 8 ohms

Intermodulation Distortion

(60 Hz : 7 kHz = 4 : 1) 0.003% at rated power
into 8 ohms

Damping Factor 1,000 at 50 Hz

Transient Response

Rise Time 1.7 μ s

Slew Rate ± 100 V/ μ s

Frequency Response DC to 200 kHz + 0 dB, -3 dB

Speaker impedance Accept 4 ohms to 16 ohms

Input Sensitivity/Impedance

Phono MM 2.5 mV/47k ohms
and 100 k ohms

Phono MC 0.1 mV/100 ohms

Tuner, AUX, Tape

Adaptor in 150 mV/47 k ohms

Signal-to-Noise Ratio (IEC-A)

Phono MM 88 dB or 2.5 mV input

Phono MC 70 dB for 100 μ V input

Tuner, AUX, Tape 108 dB

Note:

We follow a policy of continuous advancements in development. For this reason specifications may be changed without notice.

Note:

Component and circuitry are subject to modification to insure best operation under differing local conditions. This manual is based on, the U.S. (K) standard, and provides information on regional circuit modification through use of alternate schematic diagrams, and information on regional component variations through use of parts list.

Maximum Input Level for Phono

MM 200 mV (RMS), T.H.D.
0.003% at 1,000 Hz

MC 8 mV (RMS), T.H.D.
0.003% at 1,000 Hz

Output Level/Impedance

Tape REC (Pin),

Adaptor out 150 mV/680 ohms

Frequency Response for Phono RIAA standard curve ± 0.2 dB
(20 Hz to 20,000 Hz)

Tone Control

Bass ± 10 dB at 50 Hz, 100 Hz

Treble ± 10 dB at 10 kHz, 20 kHz

Loudness Control

(at -30 dB VOLUME Level) +3/6/9 dB at 30/60/90 Hz

Subsonic Filter 18 Hz, 6 dB/oct.

General

Power Consumption 4 A (U.S.A. and Canada)
550 W (European countries)
1500 W (Others)

AC Outlets Switched 2, Unswitched 1
(Except U.K., European,
Australian Countries)

Dimensions W : 440 mm (17-5/16")
H : 158 mm (6-7/32")
D : 383 mm (15-3/32")

Weight (Net) 14.7 kg (32.3 lb)

* Measured pursuant to Federal Trade Commission's Trade Regulation rule on Power Output Claims for Amplifier in U.S.A.

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